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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/626,997
Filing Date: July 25, 2003
Appellant(s): TUNG ET AL.

Derek L. Woods
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08/14/2006 appealing from the Office actions mailed 5/19/2005 and 12/01/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals, Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendment After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 5,895,825 Elsheikh et al. 04-1999

US 6,124,510 Elsheikh et al. 09-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Appellants' argument filled in the Appeal Brief, dated 08/14/2006, was not found convincing to overcome the 35 U.S.C. 103 rejection, issued in the Office Actions dated 05/19/2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5-9, 11-17, 19-20, 22-31 and 33-37 are rejected under 35 US.C. 103(a) as being unpatented over Elsheikh et al. (El), (US patent 5,895,825) in combination with Elsheikh et al. (E2), (US patent 6,124,510).

Applicants claim a process for the manufacture of 1,3,3,3-tetrafluoropropene comprising: a) reacting 1-chloro-3,3,3-trifluoropropene with hydrogen fluoride in a

reactor in the vapor phase and in the presence of a fluorination catalyst and under conditions sufficient to form an intermediate product which comprises 1-chloro-1,3,3,3-tetrafluoropropane and/or 1,1,1,3,3-pentafluoropropane; and b) reacting said intermediate product with a caustic solution and under conditions sufficient to dehydrochlorinate 1-chloro-1,3,3,3-tetrafluoropropane and/or to dehydrofluorinate 1,1,1,3,3-pentafluoropropane, forming a reaction product which comprises 1,3,3,3-tetrafluoropropene; wherein all the variables are as defined in the claims.

Determination of the scope and content of the prior art (M.P.E.P. §2141.01)

Elsheikh et. al. (El), (US patent 5,895,825), teach a process of manufacturing 1,1,1,3,3-pentafluoropentane (the intermediate of the instant claims) by reacting 1-chloro-3,3,3-trifuoropropene with hydrogen fluoride in a reactor under conditions sufficient to produce 1,1,1,3,3-pentafluoropropane (see column 1, lines 23-41).

Elsheikh et. al. (E2), (US patent 6,124,510) teach a process for preparing the cis and trans isomers of 1,3,3,3-pentafuoropropene from the intermediate of the instant claims by dehydrofluorination of 1,1,1,3,3-pentafuoropropane in a caustic solution.

Ascertainment of the difference between the prior art and the claims (M.P.E.P.. §2141.02)

The difference between Elsheikh et al. and the claims of the instant application is that Applicants claim a two step process whereas the prior (El and E2) teach a single step process for preparing the intermediate ,1,1,1,3,3-pentafluoropropane, and a single

step process for preparing the final product, 1,3,3,3- tetrafluoropropene from the said intermediate.

Finding of prima facie obviousness--rational and motivation (M.P.E.P.. §2142-2143)

The combination of two steps well known in the art would be obvious to one of ordinary skill since there is no indication of an interaction between process steps of such a type that would lead one of ordinary skill in the art to doubt that a substitution of alternative steps known in the art could be made. In re Farkas, 152, USPQ,109, (1966). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of (El) and (E2) because both (El) and (E2) teach the elements of the claims of the instant application. One of ordinary skill in the art would have been motivated to combine the teachings of (El) and (E2) in order to produce a compound that is used as a monomer in homopolymerization and copolymerization.

Based on the above, both (El) and (E2) teach the elements of the claims in the instant application with sufficient guidance, particularity and reasonable expectation of success that the claims in the instant application would be prima facie obvious to one of ordinary skill (Elsheikh et. al. teach or suggest all the claim limitations with a reasonable expectation of success M.P.E.P 21434.).

Moreover, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no

change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in art at the time of the invention.

Allowable Subject Matter

Claims 2, 4, 10, 18 and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2, 4, 10, 18 and 32 are allowable over Elsheikh et. al. because Elsheikh et. al. do not teach a process wherein the product comprises 1-chloro-1,3,3,3-propane or a mixture comprising 1,1,1,3,3-pentafluoropropane and 1-chloro-1,3,3,3-tetrafluoropropane. Additionally, they do not teach a process for the separation of a mixture comprising 1,1,1,3,3-pentafluoropropane and 1-chloro-1,3,3,3-tetrafluoropentane.

Accordingly, the Examiner finds claims 2,4,10,18 and 32 allowable.

(10) Response to Argument

Appellants arguments filed 08/14/2006 in the Appeal Brief, have been fully considered but they are not persuasive.

Applicants' argue that their invention relates to a two-stage process for the manufacture of 1,3,3,3-tetrafluoropropene (1234ze). Applicants contend that another aspect of their invention proceeds by a thermal decomposition process. Furthermore, applicants argue that the two-step process is not suggested by Elsheikh et al. {US 5,895,825} or Elsheikh et al. {US 6,124,510} according to any experimental protocol outlined in US 5,895,825 and US 6,124,510. The Examiner disagrees with the applicant

arguments because it is reasonably expected that one of ordinary skill in the art wishing to obtain 1234ze would practice the present invention by combining the teaching of the two references (that is, preparing 1.1.1.3.3-pentafluoropropane (245fa) from 1.1.1-trifluoro-3-chloro-2-propene (1233zd) followed by the preparation of 1234ze from intermediate products (245fa or 1-chloro-1.3.3.3-tetrafluoropropane).

As noted by the examiner, one of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by conducting the process of US 5,895,825 followed by the process of US 6,124,510 to arrive at the instantly claimed process of converting 1233zd to 1234ze. The choice of the two-step synthesis depends on the availability and cost of raw materials, and convenience in preparing the intermediate compound. The combination of the steps process is not a patentable distinction as claimed by applicants because the references cited teach the elements of the claimed invention with sufficient guidance, particularity, and with a reasonable expectation of success, that the invention would be *prima facie* obvious to one of ordinary skill in the art.

(11) **Related Proceeding Appendix**

No decision rendered by a court or the Board is identified by the Examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believe that the 103 rejections should be sustained.

Respectfully Submitted,

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